REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Applicants have received yet another Office action which contains an untenable rejection. We will, in the following, respond to the further non-final Office action and we request that the Examiner reconsider the rejection on the basis of the three references Thakur, Lin et al., and Schaefer et al..

Specifically, claims 12 - 26 were rejected as being obvious over a combination of Thakur et al. (6,187,628 "Thakur") with Lin et al. (5,930,625 "Lin") and Schaefer et al. (5,943,571 "Schaefer") under 35 U.S.C. § 103.

The rejection is in error. The references cannot properly be combined under 35 U.S.C. § 103 and, even if combined, they would not lead to the claimed invention.

The primary reference *Thakur* grows an HSG (hemispherical grain) polysilicon layer on a substrate with the following sequence:

- silicon deposition by CVD;
- without removing the substrate from the CVD reactor, oxidizing the silicon layer to grow a layer of silicon

dioxide or, alternatively, depositing an oxide layer by CVD;

- without removing the substrate from the CVD reactor, depositing HSG polysilicon on the silicon dioxide layer by CVD.

Lin describes a multi-step grain growing process which corresponds with the prior art process described on page 2, second paragraph, of the specification. The prior art process includes the following steps:

- deposition of amorphous silicon;
- HF-dip cleaning;
- seeding with SiH_4; and
- anneal in N_2 for growing the grains from the seeds using the amorphous silicon.

Thakur and Lin teach two different processes. The two process sequences cannot be combined. Besides, there is neither a hint nor a proper suggestion as to why a person of skill in the art would combine the teachings.

The Examiner's attention is respectfully directed to the corresponding text in the references themselves. The pertinent teachings may be juxtaposed as follows:

Thakur, col. 3, lines 23-41	Lin, col. 5, lines 16-24.
Preferably and advantageously, the substrate need not be exposed to any cleaning conditions within the reactor after providing silicon layer 16 . . . . the substrate remains in the reactor and is not removed therefrom after the oxidizing step, but rather is subjected to in situ chemical vapor deposition to provide a layer 20 of hemispherical grain polysilicon over silicon dioxide layer 18. Example conditions for providing the HSG include prior art conditions utilizing silane and appropriate dopant feed gases. Example temperature conditions are from 500°C – 600°C, with example pressure ranging from 70 mTorr to 50 Torr. An example and preferred thickness for layer 20 is from 300 Angstroms to 1000 Angstroms.	Next, the SiH_4, or Si_2H_6 flow is stopped, and at the same temperature, previously used for HSG silicon seeding, between about 550 to 580°C., and at the same pressure, previously used for HSG silicon seeding, less than 1.0 torr, an annealing procedure, in a nitrogen ambient is in situ performed in the LPCVD chamber, for a time between about 0 to 120 min, resulting in the formation of HSG silicon grains 12b, with a diameter between about 200 to 800 Angstroms.

The Examiner's apparent opinion, as stated repeatedly over the course of several Office actions, that Thakur grows a rough silicon layer "exactly similar to what is claimed" in and of itself does not make any sense nor does it have any bearing on the case at hand. For example, Thakur discloses a pressure range from 70 mTorr to 50 Torr. The Examiner's statement that Thakur's very broad range encompasses applicants' narrow range (100 mTorr to 600 mTorr) is of no import. Applicants claim result-oriented process parameters. Applicants adjust the process so that semiconductor grains are deposited directly

out of a process gas and without an annealing step. The grains are formed on the surface with a clear spacing therebetween.

Thakur does not form grains on a surface with clear spacing between the grains.

Lin requires an annealing step.

There is no reason why a person of skill in the art would pick and choose from these two references and therefrom assemble a process sequence that reads on applicants' process sequence, i.e., on the single process step for forming the HSG layer.

The combination - picking and choosing from the references to arrive at applicants' claims - is prohibited under the law of obviousness. The combination appears "obvious" only in hindsight.

We are mindful that the above discussion did not include the reference Schaefer. The reason for this is that applicants are at a complete loss as to the pertinence of Schaefer. The Examiner's explanation that

> it would have been obvious to one of ordinary skill in the art to grow spaced apart grains using nitrogen as alternative to helium in the invention of Thakur because Schaefer et al teaches art recognized

equivalents of He and nitrogen as a carrier gas to grow grains

Office action, page 4, second paragraph, does not shed much light on the issue. Applicants' claims - and certainly not the independent claims - do not concentrate on He or N and, furthermore, Thakur does not seem to be overly concerned with the selection of his carrier gas. Most importantly, such a selection, or replacement, for that matter, has no bearing on the issue at hand. Should counsel have overlooked something with regard to this issue, the Examiner is respectfully invited to comment. If not, the Examiner is requested to withdraw Schaefer.

In summary, none of the references, whether taken alone or in any combination, either show or suggest the features of any of the independent claims. All of the claims are patentable over the art of record.

Petition for extension is herewith made. The payment for a one-month extension in the amount of $ 120.00 is enclosed. The Office is authorized to charge any deficiencies to deposit account 12-1099.

In view of the foregoing, reconsideration and allowance of claims 12-26 are solicited.

Respectfully submitted,

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